INVENTION DISCLOSURE FORM

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                INSTRUCTIONS
PLEASE COMPLETE THIS DOCUMENT, INSERTING THE
REQUESTED INFORMATION AFTER EACH QUESTION.  MAIL
THE COMPLETED FORM, AND ANY ACCOMPANYING
ELECTRONIC DOCUMENTS, VIA EMAIL TO ANGELA MUISE
IN THE LAW DEPARTMENT. IF ANY SUPPORTING
MATERIALS ARE BEING SUBMITTED IN HARD COPY,
PLEASE PRINT A COPY OF THIS FORM, ATTACH TO THE
HARD COPY MATERIALS AND MAIL TO ANGELA MUISE,LAW
DEPARTMENT, 35 PARKWOOD DRIVE, HOPKINTON.
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I.   TITLE OF INVENTION:_
Encoding SCSI Requests for Transmission using TCP/IP

II.   INFORMATION ABOUT INVENTOR(S):

1.   Name:__Dean Throop

            Home Address:___112 Stratford Dr

                        Chapel Hill NC 27516

Badge No.:__11221_ Mail Stop:__rtp__ Citizenship:__U.S._

(If more than one individual contributed to the invention,
supply the above information for each additional inventor.)

III BACKGROUND INFORMATION

1.   Will a DG/EMC product use this invention?
      _____ YES

      If so, what is the internal name of the DG/EMC product
      incorporating this invention? _____
            Flare for Alpine Phase 2
      Has the product been publicly announced by DG/EMC?
      _____ I don't think so

      If announced, what name/model is the product marketed
      under? _____

      If not yet announced, what is the anticipated announce
      date for the product? _____
            May 5, 2000 (scheduled ship date)

2.   On what date did the idea of the invention first come to
      mind? _____
            Aug 1999

RALLIB01 578648.1

3. Other than discussions among the inventors named above, to whom was the invention first disclosed: _____

The date of that disclosure: _____
        I discussed this with Stephen Todd (1st in Aug 1999)
            It has been implemented by Lorenzo Bailey, Bob Frazier, and David Pressley.

4. On what date was the idea of the invention first reduced to writing in whole or in part? (This would include any form of handwritten, typed or electronic record. Send a copy of this material.) _____
            There's a specification written October 1999

5. Has construction/development of this invention started? _____ Started October or November 1999

If so, date started:_____

Has the invention been built/developed and operated successfully? ___Its been working since januay of 2000
_____

If so, date of first successful operation:_____

6. Has this invention been disclosed outside of DG/EMC? _____ I don't think so

If so, were the disclosures under a non-disclosure agreement? _____

Give dates, locations, and other relevant information about all disclosures outside of DG/EMC:
_____

7. List all functional specs, design specs, management presentations and other available materials that describe or discuss the design or operation of this invention.
        ___See attached

_____

_____

IV. TECHNICAL DISCLOSURE OF INVENTION

1. State in general terms the nature of the invention.

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An encoding of SCSI requests on TCP/IP.

2.   Describe any old method(s) of performing the function of
      the invention, indicating the disadvantages and problems
      with the old methods that are overcome by the invention.
      (Note: Describe all prior methods of which the inventors
      have knowledge, not just prior DG/EMC methods. It is
      sufficient to state the current knowledge and
      understanding of the inventors. It is not necessary that
      the inventors conduct research to identify all "old"
      methods.)

           SCSI requests are generally sent over wires created
      explicitly for just that. Two common implementations use
      parallel copper wires and fibre channel lines. The wires
      are connected using special purpose hardware boards (SCSI
      controllers) plugged into computers.

           The operating system running on the computers has
      software that uses the SCSI controllers for doing industry
      standard block I/O. Because the operating systems have
      exclusive use of the SCSI controllers, it is often
      difficult to write a user program that can send vendor
      specific SCSI requests using the SCSI controllers.

           The vendor specific requests are useful for
      configuring the target SCSI device and for monitoring it.
      Monitoring to observe failures and to track performance.

           Some operating systems provide a user pass through
      capability that allows a user program to send vendor
      specific SCSI requests to a target device. These pass
      through capabilities are operating system specific and
      don't always work very well. Some times Operating system
      SCSI pass through requests will stop other traffic until
      they complete (thus degrading performance). Some
      operating systems do not provide any SCSI pass through
      mechanism at all.

           Another alternative for a user program to access a
      target device is to connect to it using a serial cable.
      (We do this right now with clariion). The user program
      encodes the vendor specific SCSI requests and transmits
      them to the target device over a serial line. This is
      available over a wide variety of operating system.

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Unfortunately this encoding is error prone and rather slow.

By encoding SCSI requests and transmitting them using TCP/IP, we have a fast and widely available way for user applications to send vendor specific SCSI request to a target device.

2.   Describe the design and operation of the invention, indicating the specific features believed to be new and all advantages or improvements over the old methods. Use drawings, schematics, timing diagrams, flowcharts, and/or sketches as appropriate for a clear and complete understanding of the invention.

The specification is available on the web at

http://thiinman.rtp.dg.com/~flare/projects/flare_projects.htm
You will need username=clariion, password=diskus

        ->alpline network
    ->Flare Network Interface to Navisphere-2

4.   Are you aware of alternative ways in which the invention could be used or implemented? If so, describe generally (a) other applications for the invention (for example, other types of products that could benefit from the invention) and (b) alternative ways the invention could be constructed or implemented.

There is a draft for a similar implementation.
A URL for this Internet-Draft is:
http://www.ietf.org/internet-drafts/draft-satran-iscsi-00.txt

I've written a brief comparison of our approach with the above draft and our implementation and I'll attach that.

Name of Person Preparing This Disclosure:__Dean Throop_____

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Date of Disclosure:_____

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